

# Reaching our Destiny



STS100-E-5239 (April 22, 2001)

Astronaut Chris A. Hadfield, STS-100 mission specialist representing the Canadian Space Agency, stands on one Canadian-built robot arm to work with another one. Called Canadarm2, the newest addition to the ISS was ferried up to the orbital outpost by the STS-100 crew. Hadfield's feet are secured on a special foot restraint attached to the end of the Remote Manipulator System arm, which represents one of the standard shuttle components for the majority of the 100-plus STS missions thus far. The two EVAs by STS-100's crewmembers lasted a total of 14 hours, 50 minutes. There have been 64 in Shuttle Program history and 20 devoted to ISS assembly.



**W**hen Space Shuttle *Endeavour* and its crew of seven glided to a landing at Edwards Air Force Base on May 1, it concluded a successful 4.9 million-mile journey to deliver and install Canadarm2 to the International Space Station (ISS).

Canadarm2, a new-generation robotic arm supplied by the Canadian Space

Agency, is longer, stronger, more flexible and more capable than the shuttle's robotic arm. The installation and check-out of the new ISS arm involved the most complex and intricate space robotics operations ever performed.

Mission specialists Chris Hadfield, a colonel in the Canadian Air Force, and NASA astronaut Scott Parazynski

performed two space walks to install the Canadarm2 on the exterior of the station's Destiny Lab.

The *Endeavour* crew also helped transfer more than 6,000 pounds of supplies and equipment from the Italian Space Agency-supplied Raffaello Multi-Purpose Logistics Module.

*Endeavour* carried nine scientific

investigations to the station, more than any previous flight. The experiments carried aboard the Space Shuttle range from the first plant growth research to be conducted aboard the complex to studies of space radiation.

The crew—composed of space fliers from NASA, Canada, Russia and the European Space Agency—was the most diverse international crew ever flown aboard the Space Shuttle. Its members represented more nations than has any other single crew.

Kent Rominger, a Navy captain and a veteran of four past shuttle flights—including one previous ISS assembly mission—was *Endeavour's* commander. Jeff Ashby, a Navy captain and veteran of one shuttle flight, was the pilot. Mission specialists included NASA astronauts Parazynski and John Phillips.

International crew members, also mission specialists, included Hadfield, European Space Agency astronaut Umberto Guidoni and Russian Aviation and Space Agency cosmonaut Yuri Lonchakov, a colonel in the Russian Air Force. During *Endeavour's* mission, Guidoni became the first European Space Agency astronaut to enter the orbiting ISS.

STS-100 was the ninth shuttle mission to visit the space station. JSC staff and the public at Ellington Air Force Base welcomed the crew home on May 2. ■

For more information, visit:  
<http://Spaceflight.nasa.gov/>

## ASSEMBLY SEQUENCE

February 2001



March 2001



April 2001



June 2001



### ▲ Flight Control

JSC2001-E-1219 (April 19, 2001) photo by Robert Markowitz

Left to right, astronaut Christopher J. 'Gus' Loria, astronaut Scott D. Altman, flight director Leroy Cain and flight director John Shannon keep up with STS-100 pre-launch activities from their consoles in the shuttle flight control room in the Mission Control Center. Altman is ascent spacecraft communicator (CAPCOM) and is assisted by Loria, CAPCOM specializing in weather issues. Cain is ascent flight director.

▼ Astronaut Hadfield is pictured on the aft flight deck of the *Endeavour* during an historic event. A Canadian 'handshake in space' occurred at 4:02 p.m. (CDT), April 28, 2001, as the Canadian-built space station robotic arm—operated by Expedition II flight engineer Susan J. Helms—transferred its launch cradle over to *Endeavour's* robotic arm, with Hadfield at the controls. The exchange of the pallet from station arm to shuttle arm marked the first ever robot-to-robot transfer in space.

STS100-E-5901 (April 28, 2001)



STS100-E-5283 (April 23, 2001)

▲ Astronaut James S. Voss, Expedition II flight engineer, peers into the Pressurized Mating Adapter prior to opening the hatch to the STS-100 crew.

### ▼ STS-100 and Expedition II crews

STS100-E-5909 (April 23, 2001)



◀ Astronaut Susan J. Helms, Expedition II flight engineer, greets members of the STS-100 crew in the Destiny laboratory just after hatch opening. Astronaut Jeffrey S. Ashby, STS-100 pilot, documents the reunion in the background.

STS100-E-5290 (April 23, 2001)



# STS-100 FLIGHT 6A